

Date: Tuesday, 1/31/2006 1:11:44 PM
User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services
Job Number : 25690A
Estimate Number : 11546
P.O. Number : N/A
This Issue : 1/31/2006 S.O. No. : N/A
Prsht Rev. : NC
First Issue : N/A Type : LANDING GEAR
Previous Run : 25334A
Drawing Name : SKIDTUBE
Part Number : D204635041
Drawing Number : D2590 REV C
Project Number : N/A
Drawing Revision : C
Material : N/A
Due Date : 2/15/2006 Qty: 1 Um: Each
Written By : SEE COMMENT BELOW
Checked & Approved By : 06.01.31
Comment : Est Rev:F 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 D25001190 Extn -I Beam Tube 4"



Comment: Qty.: 1.0400 Each(s)/Unit Total : 1.0400 Each(s)

Pick:

Qty Part Number Description Batch

1 D2500-1-190 Skid Tube Extrusion B21778 am 06-02-06 ①

2.0 D2597 204 Web



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number Description Batch

1 D2597 204 Web B25698 fm 06-02-08 ①

3.0 LANDING GEAR 1 LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

- 1- Inspect mat'l D2500-1-190 for damage am 06-02-06 ①
- 2-Cut D2500-1-190 per Dwg D2590 if necessary Deburr ends am 06-02-06 ①
- 3-Drill pilot holes using drill jig DT 8149 & DT8711-1&2 am 06-02-06 ①
- 4-Acid etch and Alodine tube per QSI 005 4.1 am 06-02-07 ①
- 5-Open holes to 0.500" as per Dwg D2590 without cutting fluid am 06-02-07 ①
- 6-Countersink holes as per Dwg D2590 without cutting fluid am 06-02-07 ①
- 7-Deburr and blow out all chips from inside of tube am 06-02-07 ①

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)							
DATE	STEP	Description of NC Section A	Corrective Action		Section B		Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Drawing Name: SKIDTUBE

Job Number: 25690A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

8-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting

Pick:

Qty	Part Number	Description	Batch
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A/R	Sikaflex-291	m19597	
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Sikaflex expire date: 06-06-18

Start Time: 12:45

Fin Time: 10 AM

pm 06-08-08 (1)

4.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend as per program D2590.C on CNC Bender

DP 06-3-1 (1)

5.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Cut tubes as per Dwg. D2590 .

DP 06-3-1 (1)

2-Deburr ends after cutting. Remove alodine from around holes

pm 06-03-01 (1)

6.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

BE 06-03-02 (1)

7.0

D25763

Step (Machining Detail)



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
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1	D2576-3	Step	
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B 22141 BE 06-03-02 (1)

8.0

D2579

Crossbolt Spacer



Comment: Qty.: 17.0000 Each(s)/Unit Total : 17.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
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17	D2579	Spacers	
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B 25138 BE 06-03-02 (1)

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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Drawing Name: SKIDTUBE

Job Number: 25690A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

9.0

LARGE FAB 1

LARGE FABRICATION RESOURCE 1



Comment: LARGE FABRICATION RESOURCE 1

1-Prepare tube for welding D2576-3 StepRemove alodine as required. *BE 06-03-02 ①*

2-Weld step D2576 as per Dwg. D2590 and QSI 004

A/R

Aluminum Rod

m 19/100 BE 06-03-02 ①

3-Weld crossbolt spacers D2579 as per Dwg. D2590 and QSI 004. For D2579

spacers, weld one

side, pass 3/8" drill, weld other side, pass 3/8" drill

A/R

Aluminum Rod

m 19/100 BE 06-03-02 ①

4-Grind welds as per Dwg D2590 Grind flush ridge made from bending *Pm 06-03-02 ①*

5-Drill holes for wearplates using DT 8218 Open holes to 19/64", adjust stopper not to hit crosstubes. Deburr *Pm 06-03-03 ①*

6-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2590. Deburr holes *Pm 06-03-03 ①*

7-Drill pilot holes for aft cap using DT 8215 Open holes to #6 Drill bit. Deburr *Pm 06-03-03 ①*

8-Drill pilot holes for Tow ring using DT8091, open to .640" and Deburr *Pm 06-03-03 ①*

10.0

QC5/9

WELD INSPECTION



Comment: WELD INSPECTION

Inspect weld and Counterbore work to Step 20

PD 06-03-16

11.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Powder Coat White (Ref: 4.3.5.2) as per QSI 005 4.3

DL 06/04/20 ①

12.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

1 060421 ①

13.0

D25771

Wearplate Fwd



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty

Part Number

Description

Batch

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Drawing Name: SKIDTUBE

Job Number: 25690A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

1

D2577-1

Wearplate

~~B10922~~ B24371

14.0

D25773

Wearplate Aft



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
1	D2577-3	Wearplate	B25137

15.0

D25777

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
1	D2577-7	Wearplate	B10922

16.0

ALS71032130

Insert



Comment: Qty.: 38.0000 Each(s)/Unit Total: 38.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
38	ALS7-1032-130	Inserts	M18293

17.0

AN960JD10L

Washer



Comment: Qty.: 38.0000 Each(s)/Unit Total: 38.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
38	AN960JD10L	Inserts washers	M19185

18.0

AN34A

Bolt



Comment: Qty.: 38.0000 Each(s)/Unit Total: 38.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
38	AN3-4A	Bolt	5X M16612, 33X M18310

DL 06/04/24 (1)

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: SKIDTUBE

Job Number: 25690A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

19.0

D25941

Plug



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
10	D2594-1	Plug	B24374

20.0

D25943

O-Ring



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
10	D2594-3	Plug o-ring	B24104

21.0

D2855

Cap



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Cap

B23925A

22.0

AN35A

Bolt



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Bolt

M15205

23.0

AN960JD10L

Washer



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Washer

M19185 PL 06/04/24 (1)

24.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

1-Install inserts & wearplates as per Dwg. D2590. Use a drop of Sikaflex on insert holes before installing wearplates

A/R Sikaflex-291 M100480

Sikaflex expire date: 11/06

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

DL 06/04/24 (1)

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: ☒ Date: 06/04/20
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)							
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date				

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Process Sheet

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Drawing Name: SKIDTUBE

Job Number: 25690A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

4-Install 2855 Aft Cap as per Dwg D2590 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive

A/R Sikaflex-291

Sikaflex expire date: 11/06

5-Wing Walk as per Dwg D2590 and QSI 005 4.4

M14507

Batch:

DL 06/04/22 (1)

25.0

QC5

INSPECT WORK TO CURRENT STEP



06/04/25 (1)

Comment: Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

26.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Inspection Level 21

SP 06/04/26 (1)

Job Completion



UL 06/04/26

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng		Sign & Date			

NOTE: Date & initial all entries



DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2590	REV. C SHEET 1 OF 2
DATE 98.08.28		TITLE 204 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.28	REDRAWN, INCLUDED DEO 9094/9097	

RELEASED
98/09/11 DS

QTY	Part Number	Description
X	D2590-041	SKIDTUBE ASSEMBLY
*	D2500-1	EXTRUSION
1	D2597	204 WEB
1	D2575	AFT CAP
1	D2576-3	STEP
17	D2579	CROSS BOLT SPACER
10	D2594-1	PLUG
10	D2594-3	O-RING
1	D2577-1	WEARSHOE
1	D2577-3	WEARSHOE
1	D2577-7	WEARSHOE
38	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or ALS4-1032-130	INSERT
40	AN3-4A	BOLT
40	AN960JD10L	WASHER

00.08-26
P 00.08.28

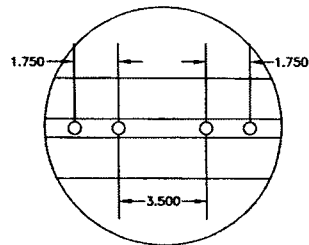
DEOS
EFFECTIVE
98/12/14

GENERAL NOTES:

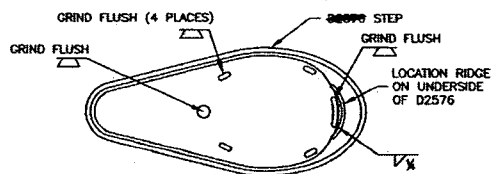
- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) LENGTH OF D2500-1 EXTRUSION BEFORE BENDING = 189.5 INCHES *
- 3) INSERT D2597 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-204 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (38 PLACES) AFTER FINISH. INSTALL AN3-4A BOLTS AND AN960JD10L WASHERS WITH SIKAFLEX-241.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2597 WEB
POWDER COAT ASSEMBLY GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (10 PLACES).

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 25690A

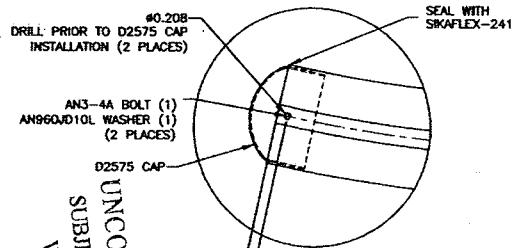
DETAIL A
SCALE 5:24



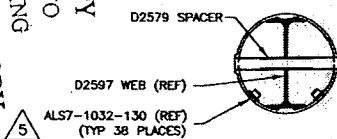
DETAIL B
SCALE 5:24



DETAIL C
SCALE 5:24

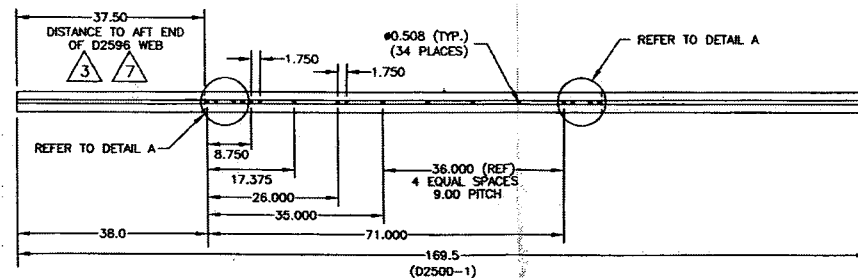


SECTION D-D
SCALE 5:24

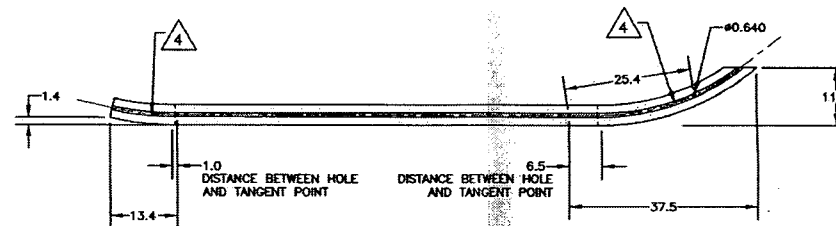


AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR #0.508 HOLES ONLY:
1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (17 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C-BORE D2579 SPACER TO #0.437 X 1.00 DEEP

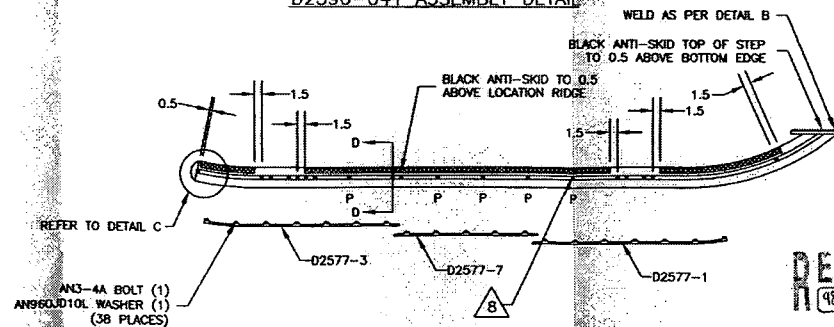
D2590-1 DRILLING DETAIL



D2590-1 BENDING AND CUTTING DETAIL



D2590-041 ASSEMBLY DETAIL



RELEASED
98/09/17 85

COPY 15510

DESIGN DART	DRAWN BY DART	DART AEROSPACE LTD HARRISBURG, ONTARIO, CANADA	REV. C
CHECKED DART	APPROVED DART	DRAWING NO. D2590	SHEET 2 OF 2
DATE 98.08.28	TITLE 204 SKIDTUBE ASSEMBLY	SCALE 1:24	

NO. 25642 A
WORK ORDER
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